Foreign Business Activities, Foreignness of the VC Syndicate, and IPO Value

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ABSTRACT

This paper examines the role played by foreign venture capital (VC) firms in US initial public offerings (IPOs). We find that US VC-backed IPOs benefit from the foreignness of the VC syndicate. Specifically, jointly with domestic VC firms foreign VC firms certify the quality of their portfolio companies at the time of the IPO, which increases their IPO premium. Foreign VC firms also play an advisory role, enhancing the foreign business activities of their US investees, thereby increasing the IPO premium. Finally, value added by foreign VC firms is greater through their monitoring role if they originate from countries where the investee has foreign business activities.

Keywords: venture capital, initial public offerings, foreignness of the VC syndicate, foreign business activities, certification, advisory, monitoring, international presence.

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1. INTRODUCTION

An initial public offering (IPO) entails great uncertainty (Filatotchev et al., 2016). Hence, IPO companies may seek certification from third-parties — such as venture capital (VC) firms — to reduce uncertainty and improve their IPO value (Megginson & Weiss, 1991). However, not all VC firms are the same. An important distinction is between domestic and foreign VC firms. Foreign VC firms have their headquarters in countries other than the ones of their portfolio companies, and they may therefore suffer from a liability of foreignness and high adverse selection (Wright et al., 2005; Devigne et al., 2016), which could be mitigated by foreign VC firms forming syndicates with domestic VC firms (Cumming & Dai, 2010). Nevertheless, as sophisticated investors, foreign VC firms may provide their portfolio companies with new skills, knowledge and resources (Meuleman et al., 2017). As such, their joint presence with domestic VC firms in the VC syndicate is likely to certify the quality of the IPO firm. Further, foreign VC firms may provide advice on the foreign business activities of their portfolio companies as well as monitor these activities. Prior literature has focused on how cross-border VC syndicates assist their portfolio companies in their growth and internationalization (Devigne et al., 2013; Humphery-Jenner & Suchard, 2013a, Chemmanur et al., 2016). Yet, we know little about how foreign VC firms support their portfolio companies internationally, and affect their value at the IPO. This study fills this gap by attempting to answer the following research questions. First, what are the effects on IPO value of the involvement of both foreign VC firms, i.e. non-US VC firms, and domestic US VC firms, in the VC syndicate of US IPO companies?[1] Second, is there an impact of foreign VC firms on the association between foreign business activities and IPO value for US IPO companies?

[1] We define the VC syndicate as the group of all VC investors in the venture immediately prior to the IPO.

As the IPO company and the underwriter embark on setting the offer price, they receive feedback from investors during the roadshows they conduct. Accordingly, the premium paid by investors above and beyond the pre-IPO book value per share reflects their perception of the future value of the company and its earnings potential (Lester et al., 2006).[2] The IPO premium represents the excess of a company's offer price compared to its book value and hence captures the present value of growth opportunities embedded in the offer price (Welbourne & Andrews, 1996).[3] It reflects the company's assets and provides an estimate of investors' perceived future value and a "*sense of their* (the market) *perceptions of a firm's competitiveness*" (Bell et al., 2014, p. 308). Importantly, the IPO premium allows for measuring assets that "*are difficult to account for*" (Nelson, 2003, p. 715), such as foreign assets.

We hypothesize that foreign VC firms play three roles around the time of the IPO. First, VC firms – whether domestic or foreign – play a certification role stemming from their superior capabilities of valuing IPO companies (Stuart et al., 1999). We expect the joint involvement of foreign and domestic VC firms in the VC syndicate to signal the quality of the portfolio company and to certify its value at the time of the IPO. Second, foreign VC firms may play an advisory role in their portfolio companies. Foreign VC firms have the skills, the knowledge, and the networks to advise their portfolio companies on how to develop their foreign business activities, thus increasing IPO value. Third, foreign VC firms may play a monitoring role, whereby they may act as monitors of ventures' foreign business activities in their country of origin.

To test the validity of our hypotheses on how the three roles of foreign VC firms affect IPO value, we study a sample of 1,086 VC-backed US IPOs from 1995 to 2011. Our paper makes

[2] See Certo et al. (2009) for a discussion about the different performance measures used in the IPO literature.
[3] The book value might not represent the true value of VC-backed entrepreneurial firms as they may have positive cash-flows, but negative earnings before they go public. This might then result in a negative book value. Nevertheless, none of our sample IPO companies has a negative book value before the IPO.

three important contributions to the existing literature. First, it complements prior evidence on the certification role played by VC firms in general (Megginson & Weiss, 1991), and the joint role played by foreign and domestic VC firms within the VC syndicate in particular (Devigne et al., 2013; Jääskeläinen & Maula, 2014; Chemmanur et al., 2016). We hypothesize that a VC syndicate composed of both domestic (US) and foreign (non-US) VC firms is better able to certify the quality of its US portfolio company than a syndicate with only US or non-US VC firms; this in turn leads to a higher IPO premium. We find empirical support for this hypothesis.

Second, this paper sheds light on the advisory and monitoring roles played by foreign VC firms investing in US IPO companies, thereby extending the existing literature on value added by foreign VC firms (Nahata et al., 2014; Chemmanur et al., 2016). By accounting for the origin of foreign VC firms and the countries where the IPO company has foreign business activities, our research complements previous studies, which attempt to disentangle the different roles played by VC firms in advising and monitoring their portfolio companies (Hellmann & Puri, 2002). We argue that foreign VC firms are likely to bridge the liability of foreignness of their portfolio companies, while domestic VC firms bring knowledge of the US business environment and market. We expect foreign VC firms to provide advice on the foreign business activities of their investees and monitor these activities, thus enhancing value creation. The results support our hypothesis.

Finally, our paper contributes to previous literature on investor home bias (e.g. Cumming & Dai, 2010), and recent empirical findings on the difficulties of attracting VC investors to participate in the syndicates of new US ventures looking to develop internationally (LiPuma & Park, 2013). We add to this stream of literature and show how foreign VC firms affect the association between foreign business activities and IPO value. Understanding the roles of foreign VC firms has policy relevance. Indeed, studying these roles provides further insights

into the relationships between the strategic goals set for portfolio companies and the composition of their VC syndicate.

The remainder of this paper is organized as follows. Section 2 reviews the literature and develops the hypotheses. Section 3 presents the data sources, sample, and methodology. Section 4 focuses on the empirical results and Section 5 conducts further investigations. Finally, Section 6 discusses the practical relevance of our results, the limitations of the study and concludes by suggesting possible avenues for future research.

2. LITERATURE REVIEW AND HYPOTHESES

2.1. The certification role of foreign VC firms

As professional investors, foreign VC firms are likely to perform a thorough preliminary risk assessment, and due diligence of the information available for valuation (Karsai et al., 1998). In particular, the cultural distance between foreign VC firms and their portfolio companies may make the former more cautious than domestic VC firms in their selection choices, and create incentives for better screening of their portfolio companies (Nahata et al., 2014). The involvement of foreign VC firms within the VC syndicate may thus constitute a positive signal about the portfolio company, thereby certifying its quality to IPO investors (Karsai et al., 1998).

However, despite the recent growth in cross-border VC investment, VC firms may suffer from a liability of foreignness given their lack of local market knowledge as well as their lack of access to local networks, and local resources (Zaheer, 1995). Foreign VC firms are often unfamiliar with local markets due to their limited direct experience, thus suffering from low trust with local networks (Ahlstrom et al., 2007).

In contrast, domestic VC firms are likely to complement foreign VC firms by counterbalancing their weaknesses. Indeed, compared to foreign VC firms, domestic VC firms have better

knowledge of the local market and the quality of investment opportunities provided by local portfolio companies. The liability of foreignness of foreign VC firms could thus be mitigated by having a VC syndicate composed of both foreign and domestic VC firms (Cumming & Dai, 2010). In support of this argument, foreign VC deal syndication with local partners has been found to reduce risk, facilitate the due diligence process, improve venture outcome, and assist in the monitoring of the portfolio company (Meuleman & Wright, 2011). Further, Humphery-Jenner & Suchard (2013b) study the effect of foreign VC firms on Chinese IPO companies, and find that the likelihood of success of an IPO company increases if the foreign VC firm collaborates with a local partner. Moreover, VC syndicates composed of both foreign and domestic VC firms have a greater positive effect on post-IPO operating performance than VC syndicates composed of purely foreign or purely local VC firms (Chemmanur et al., 2016). Close and direct connections between domestic and foreign VC firms thus have a certification effect, which facilitates quality assessment of both domestic and foreign business activities (Jääskeläinen & Maula, 2014).

Hence, compared to a VC syndicate, which consists of purely foreign or local VC firms, a VC syndicate composed of both foreign and domestic VC firms is likely to provide greater certification of the IPO value:

Hypothesis (1): The IPO premium is greater for IPO companies with a VC syndicate with both foreign and domestic VC firms.

2.2. The advisory role of foreign VC firms

When growing internationally and developing their business beyond their domestic borders, new ventures suffer from a liability of foreignness that could be reduced by foreign VC firms (Maula et al., 2005; Devigne et al., 2013). Foreign business activities offer several advantages (Zahra et al., 2000), but they are also risky as they expose companies to more varying political,

economic, social, and technological environments. These risks are more pronounced for companies with limited funding that have to tap into new sources of capital through an IPO (LiPuma, 2012). Hence, foreign business activities may have a positive or negative effect on IPO value.

Given this liability of foreignness that could limit their international growth (Devigne et al., 2013), new ventures may benefit from the knowledge, the advice, and the resources provided by VC firms (Schertler & Tykvova, 2011). Compared to domestic VC firms, foreign VC firms are more familiar with foreign markets. They also have the incentives to supply such strategic and operational advice to increase the likelihood of success of their portfolio companies (Barney et al., 1996).

More specifically, foreign VC firms may provide advice on the human, social, and physical capital that enables IPO companies to develop their foreign business activities in a more efficient and effective manner. They may also provide their IPO companies with other intangible resources, such as private knowledge and experience about foreign markets and foreign legal requirements (Mäkelä & Maula, 2006). To sum up, foreign VC firms may offer their IPO companies access to their networks in foreign markets, which could help them recruit personnel, identify customers, build business partnerships, and access financiers (Mäkelä & Maula, 2006; Hursti & Maula, 2007). Foreign VC firms may thus positively affect the competitive advantage and the performance of an IPO company (Devigne et al., 2013).

Based on the above literature, foreign VC firms are likely to support the international growth of their portfolio companies. Through their presence in the IPO companies, foreign VC firms may play an advisory role in their IPO companies engaged in foreign business activities. Investors may thus be willing to pay a greater premium for IPO companies with foreign business activities that have foreign VC backing. Hence:

Hypothesis (2): The interaction between foreign VC presence and foreign business activities has a positive effect on the IPO premium.

2.3. The monitoring role of foreign VC firms

Following their investment, we expect VC firms to monitor their portfolio companies through frequent visits to their IPO companies' operational sites (Gorman & Sahlman, 1989). Bernstein et al. (2016) use a natural experiment to examine the direct effect of VC involvement and monitoring on the performance of their portfolio companies. Following the introduction of new airline routes that reduce the travel time between the VC firms and their portfolio companies, the authors find a greater probability of a successful exit through an IPO or an acquisition.

In what precedes, we assumed differences in knowledge between domestic VC firms and foreign VC firms: Domestic VC firms have better knowledge of the domestic market and institutions whereas foreign VC firms have better knowledge of foreign markets and institutions. What then matters is the proximity of foreign VC firms to the foreign operations of their portfolio companies as this would allow them to monitor their portfolio companies at a lower cost. Indeed, such proximity would enable foreign VC firms to visit foreign plants located in their countries more easily, as well as read business reports and review operations without significant loss of time. In other words, such proximity would reduce the agency costs and ultimately improve performance (Giroud, 2013; Coval & Moskowitz, 1999, 2001).

Domestic VC firms may thus rely on foreign VC firms to monitor the foreign business activities in the home countries of the foreign VC firms, as they better understand the cultural and institutional conditions. Based on the above, we hypothesize that foreign VC firms that originate from the same countries where the IPO company has foreign business activities will be better able to monitor such foreign business activities, thus increasing the IPO premium. Hence:

Hypothesis (3): The interaction between foreign VC presence and foreign business activities has a greater positive effect on the IPO premium if the foreign VC firms are from the same countries where the IPO company has foreign business activities.

Figure 1 depicts our theoretical model, and refers to our three hypotheses. First, it exhibits the positive effect of a VC syndicate including both foreign and domestic VC firms on the IPO premium (Hypothesis (1)). Second, it illustrates that the interaction between foreign VC firms and foreign business activities positively impacts the IPO premium (Hypothesis (2)). Finally, it explains that, when the headquarters of at least one of the foreign VC firms are located in the same country where the IPO company has foreign business activities, this positively affects the IPO premium (Hypothesis (3)).

Insert Figure 1 Here

3. DATA SOURCES, SAMPLE, AND METHODOLOGY

3.1. Data sources and sample

Our sample is drawn from the entire population of 6,009 IPO companies in the US markets completed between January 1, 1995 and December 31, 2011 as obtained from the Global New Issues database of Thomson Financial Securities Data Company (SDC). In line with prior IPO literature, we first exclude all ADRs, REITs, unit offerings, carve-outs and spinoffs, closed-end funds, foreign IPOs, and IPOs with an offer price below USD 5.[4] There are 2,294 such IPOs. This results in 1,805 VC-backed IPOs after excluding 1,910 non-VC-backed IPOs. We then match the VC-backed IPOs with the list of companies in the VentureXpert database, and we exclude 445 VC-backed IPOs with incomplete data on the VC syndicate. We also exclude

[4] We exclude IPOs with an offer price below $5, so called penny stocks. Such stocks are usually excluded as they do not qualify for listing on the NASDAQ, AMEX, and the NYSE exchanges (Loughran and Ritter, 2004).

85 companies not covered by Datastream. We then match the remaining 1,275 VC-backed IPOs with data from both the Deals module of the Thomson One Banker database and Datastream. We then exclude 189 VC-backed IPOs with missing data on firm characteristics and CEO origin. The latter is collected from their biography on the CEOs' company's website, the IPO prospectus, and via the CEOs' LinkedIn accounts. The final sample includes 1,086 VC-backed IPOs. Since our unit of analysis is the VC-backed IPO company and since our paper studies the certification, the advisory and monitoring roles played by foreign VC firms in IPO companies, we run our empirical tests on the 1,086 VC-backed IPOs.[5]

Although not tabulated, we investigate the sample's representativeness of the entire population of US VC-backed IPO companies. We compare the distribution across IPO years, and across industries using the one-digit Standard Industrial Classification (SIC) for the population of 1,805 VC-backed IPO companies to those for the sample of 1,086 VC-backed IPO companies and the subsample of foreign VC-backed IPO companies. The tests for the difference in proportions confirm that the sample's distribution across IPO years and industries is similar to that of the overall population. Finally, there are also no significant differences in the average age, the average market capitalization, and the proportion of IPO companies in the hi-tech sector between the sample of 1,086 VC-backed IPO companies and the entire population of VC-backed IPO companies.

[5] We first match the list of IPO companies in the Deals module of Thomson One Banker with the list of companies in the VentureXpert database based on the company name and the six-digit Committee on Uniform Securities Identification Procedures (CUSIP) number. To collect data from Datastream, we then use the International Securities Identification Number (ISIN), the unique company identifier used by Datastream. Since the ISIN is only available for a very small number of companies contained in the Deals module we manually look up all of the remaining companies in Datastream to get their ISIN.

3.2. Methodology

In line with prior literature, we use the IPO premium, i.e. the difference between the offer price and the pre-IPO book value per share expressed as a fraction of the offer price (Rasheed et al., 1997; Nelson, 2003), as a measure of investors' IPO valuation. Prior research uses three proxies for internationalization: foreign sales to total sales, foreign assets to total assets (Blonigen & Wooster, 2003; LiPuma 2012), and foreign net income to total net income (Kotabe et al., 2002). Data for all three proxies is collected from Datastream for the fiscal year prior to the IPO. Our paper focuses on the foreign sales to total sales measure, for which we have the greatest number of observations. Untabulated robustness tests using foreign assets and foreign income confirm our results.

We consider a VC firm to be foreign if its country of incorporation is not the USA as per VentureXpert, Pratt VC Guidebook, and the VC firm's website. To examine the effect of the foreignness of the VC syndicate, we use two different variables to measure the presence of foreign VC firms, which are: (1) *Proportion of Foreign VCs*, which is the number of foreign VC firms divided by the number of VC firms in the IPO company's VC syndicate, and (2) *Foreign VC Ownership*, which is the number of shares owned by foreign VC firms divided by the total number of shares outstanding, both measured immediately prior to the IPO.

An important methodological issue this paper faces stems from the three roles we argue that foreign VC firms assume. These are their certification role (Hypothesis (1)), their advisory role (Hypothesis (2)) and their monitoring role (Hypothesis (3)) (see also Figure 1). Hence, we expect that foreign VC firms i) select US ventures with existing or potential foreign business activities as they have a competitive advantage in certifying such activities, and ii) provide relevant advice and iii) monitor the foreign business activities of their US portfolio companies. One of the limitations of our study is that the data does not permit us to identify what occurred

first, i.e. the foreign VC backing or the foreign business activities. Hence, the direction of causality between foreign business activities and the involvement of foreign VC firms is not clear. Nevertheless, three-stage least-squares (3SLS) regression analysis enables us to adjust for foreign VC firms selecting US IPO companies with existing foreign business activities as well as foreign VC firms supporting the internationalization of their US portfolio companies.[6] Thus, we estimate the following 3SLS regressions. Equation (1) is our main equation, explaining the IPO premium whereas equations (2) and (3) control for the endogenous determination of both the foreignness of the VC syndicate and foreign business activities (proxied by the proportion of foreign sales), respectively, which in turn affect the IPO value:

$$\textit{IPO Premium} = \alpha_0 + \alpha_1 \textit{ Foreign and Domestic VC dummy} + \alpha_2 \textit{ Foreign Business Activities} + \alpha_3 \textit{ Foreign VC Presence} + \alpha_4 \textit{ Foreign Business Activities x Foreign VC Presence} + \textit{Control variables} + \textit{Industry dummies} + \textit{Year dummies} + \xi \quad (1)$$

$$\textit{Foreign VC Presence} = \beta_0 + \beta_1 \textit{ Foreign Business Activities} + \beta_2 \textit{ Pre-existing Foreign VC-VC Syndicate Relationship dummy} + \textit{Instrumental variables} + \textit{Control variables} + \textit{Industry dummies} + \textit{Year dummies} + \varepsilon \quad (2)$$

$$\textit{Foreign Business Activities} = \gamma_0 + \gamma_1 \textit{ Foreign VC Presence} + \textit{Instrumental variable} + \textit{Control variables} + \textit{Industry dummies} + \textit{Year dummies} + \mu \quad (3)$$

Where, equation (1) tests the validity of Hypotheses (1), (2) and (3) on IPO value, which is measured by *IPO Premium*. Specifically, we test the validity of the first hypothesis on the certification role of domestic and foreign VC firms by using *Foreign and Domestic VC dummy*, which is equal to one if the VC syndicate is composed of both foreign and domestic VC firms,

[6] We find evidence of both. Also, in an earlier version of this paper, we used a simultaneous system controlling for the endogenous determination of foreign business activities *only* (current equation (3)), and the key results remain the same.

and zero otherwise. The validity of Hypothesis (2) on the advisory role of foreign VC firms is tested via the interaction term between the foreignness of the VC syndicate, i.e. foreign VC presence, and foreign business activities, i.e. the proportion of foreign sales. We expect the coefficient on this interaction term to be positive (see Figure 1). The validity of Hypothesis (3) is tested via subsample analysis where we distinguish between IPO companies with foreign business activities in at least one of the VC countries of origin and those without such foreign business activities. We expect the coefficient on the interaction between foreign VC presence and foreign business activities to be positive for the former subsample, and we expect it to be significantly higher than the one in the latter subsample.

Equation (2) explains the foreignness of the VC syndicate (*Foreign VC Presence*), proxied by the two alternative measures of foreign VC presence (the proportion of foreign VC firms in the VC syndicate, and foreign VC ownership). The equation includes *Same Foreign VC-CEO Origin* and *Pre-existing Foreign VC-VC Syndicate Relationship dummy* as instrumental variables (IVs). The first IV is a dummy variable equaling one if the CEO has the same national origin as at least one of the foreign VC firms in the syndicate, and zero otherwise. The second IV is also a dummy variable. It equals one if any of the foreign VC firms has co-invested in a prior IPO company with any other member of the VC syndicate, and zero otherwise. Prior research suggests that ethnic origin and shared socio-cultural backgrounds represent important attributes, which are likely to create a trusting relationship between individuals (Marsden, 1988). We thus expect foreign CEOs to attract foreign VC firms from their country of origin, which increases the foreignness of the VC syndicate. Prior research also suggests that IPO investors prefer to invest with other investors, with whom they have a pre-existing relationship through prior syndication (Meuleman et al., 2009). As such, we expect the foreignness of the VC syndicate to increase if foreign VC firms have prior syndication experience with any of the VC syndicate members.

The third regression, equation (3), explains the magnitude of foreign business activities, measured by foreign sales as a proportion of total sales in the fiscal year prior to the IPO. This regression uses *Foreign CEO dummy* as an IV. This variable is equal to one if the CEO of the IPO company at the time of the IPO was not born in the USA, and zero otherwise. This is in line with prior research suggesting that US companies that switch from US CEOs to foreign CEOs experience an increase in their foreign assets and foreign sales (Blonigen & Wooster, 2003), as well as an increase in their exporting activities (Sala & Yalcin, 2014).

We use the following control variables. We use VC firms' reputation as more reputable VC firms are likely to get more involved in their portfolio companies and support their growth, which ultimately improves the performance of the IPO companies (Chahine & Goergen, 2011). *Foreign (Domestic) VC Reputation* is equal to the total number of previous US IPOs with which all of the IPO company's foreign (domestic) VC firms were involved during the five years prior to the IPO. We also use *Same Foreign CVC-IPO Company Industry*. This is a dummy variable equal to one if the VC syndicate includes a foreign corporate VC, whose parent company operates in the same industry (based on the one-digit SIC) as the IPO company, and zero otherwise. A foreign corporate VC firm operating in the same industry as the portfolio company is more likely to contribute to the international growth of the portfolio company given that the latter has a strategic fit with the parent of the corporate VC firm (Ivanov & Xie, 2010).

In addition, we use a set of control variables that prior literature identifies as determinants of the IPO premium. These include IPO company size, measured by *Market Capitalization*, i.e. the total number of shares outstanding immediately after the IPO times the offer price (Beatty & Ritter, 1986), and *Company Age*, i.e. the difference, in years, between the IPO date and the company's incorporation date (Loughran & Ritter, 2004). Both variables are expected to be negatively associated with the IPO premium. Additionally, high-technology companies have greater potential for growth (Chahine & Goergen, 2013). Hence, we include *Hi-tech dummy*,

which equals one if the IPO company is a hi-tech company, and zero otherwise. We expect it to positively affect the IPO premium. We also include *Number of Risk Factors*, which is the number of risk factors listed in the IPO prospectus, which might negatively affect the IPO company's valuation (Cyr et al., 2000). The presence of a founder CEO was found to positively affect the IPO premium (Nelson, 2003). Hence, we include *Founder CEO*, a dummy variable, which is equal to one if the IPO company's CEO is a founder, and zero otherwise. IPOs with a greater equity offer ratio are likely to be priced lower (Shleifer, 1986). *Equity Offer Ratio* is defined as the number of shares issued in the IPO divided by the total number of shares outstanding immediately after the IPO, and we expect it to be negatively associated with the IPO premium.

In line with prior research (Filatotchev et al., 2016), we use *Loss dummy Y-1* and *Loss dummy Y-2* to control for prior performance. The former and the latter take the value of one if the company has a negative ROA in year -1 and year -2 prior to the IPO year, respectively, and zero otherwise. We use *VC Syndicate* to control for the size of the VC syndicate, i.e. the number of VC firms investing in the IPO company immediately prior to the offering, and we expect it to increase IPO value (Tian, 2012). We use *NASDAQ dummy* as there exist significant differences in IPO valuations between NASDAQ and the other exchanges (Lowry et al., 2010). The length of the lock-up period has been suggested as a signal of the IPO company's quality (Bruton et al., 2010). We expect it to positively affect the IPO premium. *Lock-up Period* is the difference, in days, between the IPO date and the lock-up expiry date (Chahine & Goergen, 2011). Underwriter reputation is also an important signal, as reputable underwriters certify the quality of the issuing companies, reflected in a greater IPO premium. Underwriter reputation is based on the ranking by Loughran & Ritter (2004), which uses a scale of zero to nine, ranging from the least to the most prestigious underwriter. We also use *Bubble dummy*, which equals one if the IPO was in 1999-2000, and zero otherwise. This period is characterized by greater

availability of capital as well as higher valuation multiples, thus leading to a positive association between the IPO premium and the bubble dummy (Chahine & Goergen, 2011).

We also control for the momentum effect: *Market Return*, the pre-IPO market return, which is positively associated with IPO value. In line with Chahine & Goergen (2011), *Market Return* is the weighted average of the daily returns on the CRSP equally weighted portfolio over the three months preceding the IPO date, where the average daily return for the third month preceding the IPO date is given a weight of 1, the average daily return for the second month a weight of 2, and that for the first month prior to the IPO date a weight of 3. Finally, we control for differences across industries via two-digit SIC codes and differences across time via IPO year dummies. The equations measuring foreign VC presence by foreign VC ownership further control for domestic VC ownership. The definitions of the variables are listed in the Appendix.

4. EMPIRICAL RESULTS

We start by discussing descriptive statistics. We then analyze the associations between the IPO premium, foreign business activities, and foreign VC firms as stated in our hypotheses.

4.1. Descriptive statistics

Table 1 shows descriptive statistics for the sample, i.e. the mean, median, and standard deviation. Panel A focuses on the IPO company characteristics. Panel B reports descriptive statistics for the VC characteristics for both our sample of 1,086 VC-backed IPOs and the subsample of 314 VC-backed IPOs, which involve foreign VC firms. Although not tabulated, foreign VC firms originate mostly from Europe (49.43%) and South-East Asia (36.05%). More specifically, they come from the UK (20.4%), Japan (14.96%), and Canada (12.24%).

The sample of VC-backed IPOs in Panel A has an average (median) IPO premium of 73.4% (74.4%). The average proportion of foreign sales (*Proportion Foreign Sales*) is 0.110. The

descriptive statistics for the remaining IPO company characteristics are in line with the existing IPO literature. It is noteworthy that 25% of IPO companies have a foreign CEO (*Foreign CEO dummy*), and 3.4% of CEOs originate from the same country as at least one of the foreign VC firms in the syndicate (*Same Foreign VC-CEO Origin*).

Insert Table 1 Here

Panel B first reports the characteristics of the VC firms involved in the sample of VC-backed IPOs. The VC syndicate (*VC Syndicate*) comprises about four VC firms on average. The average proportion of foreign VC firms (*Proportion of Foreign VCs*) and domestic VC firms (*Proportion of Domestic VCs*), i.e. the number of foreign VC firms and that of domestic VC firms divided by the total number of VC firms in the VC syndicate, is 0.098 and 0.902, respectively. Foreign VC firms (*Foreign VC Ownership*) and domestic VC firms (*Domestic VC Ownership*) own on average 3.8% and 36.5% of the shares outstanding immediately prior to the IPO, respectively. Moreover, VC syndicates involving both foreign and domestic VC firms represent 26.7% of the VC-backed sample. Finally, 15.7% of IPO companies have foreign business activities in the same country as the country of origin of at least one of their foreign VC firms (*Same VC-Foreign Business Country*). The remainder of Panel B presents descriptive statistics for the VC characteristics for the subsample of 314 VC-backed IPOs involving foreign VC firms. We find a larger VC syndicate than for the sample of all VC-backed IPOs, with around six VC firms on average rather than just four. Foreign VC firms represent 33.7% of the VC syndicate, and they own an average 13.2% of shares outstanding prior to the IPO date.

The correlation matrix is reported in Table 2. Our instruments in equations (2) and (3) are valid: *Same Foreign VC-CEO Origin* and *Pre-existing Foreign VC-VC Syndicate Relationship dummy* are correlated with each of the two measures of foreign VC presence. However, they

are not correlated with the proportion of foreign sales nor the IPO premium. Moreover, *Foreign CEO dummy* is correlated with *Foreign Business Activities*, but it is not correlated with any of the two measures of the foreignness of the VC syndicate nor the IPO premium. None of the variance inflation factors (VIF) is greater than 2.72, which suggests that there is no severe multicollinearity.

Insert Table 2 Here

4.2. The IPO premium, the foreignness of the VC syndicate, and foreign business activities

Table 3 examines the effects of the foreignness of the VC syndicate and foreign business activities on the IPO premium. It is based on the 3SLS model developed in Section 3.2. Regressions (1a) and (1b) test the validity of Hypothesis (1) by examining the effect on the IPO premium of a VC syndicate composed of both foreign and domestic VC firms. They also test the validity of Hypothesis (2) by examining the effect on the IPO premium of the interaction of the foreignness of the VC syndicate with foreign business activities. Regressions (2a) and (2b) explain the foreignness of the VC syndicate, whereas regressions (3a) and (3b) explain foreign business activities (measured by foreign sales as a proportion of total sales). Again, the latter two sets of regressions control for the endogenous determination of the foreignness of the VC syndicate (equation (2)) and foreign business activities (equation (3)).

The various regressions, designated by the letters *a* and *b*, use two different proxies for foreign (domestic[7]) VC presence. Foreign VC presence is measured by the proportion of foreign VC firms in the VC syndicate in regressions (1a), (2a), and (3a),[8] and foreign VC ownership in regressions (1b), (2b), and (3b).

Insert Table 3 Here

[7] Where applicable.

[8] The proportion of domestic VC firms is omitted to avoid perfect multicollinearity.

Regressions (1a) and (1b) suggest that the IPO premium increases with the presence of a VC syndicate with both domestic and foreign firms (p=5%), thus providing support for Hypothesis (1). They also suggest that foreign business activities, as measured by the proportion of foreign sales, positively affect the IPO premium (p=5% or better). Importantly, these regressions also indicate that the IPO premium is not positively related to foreign VC presence.[9] However, this does not preclude an indirect positive effect as per Hypothesis (2). Indeed, regressions (1a) and (1b) confirm the positive effect on the IPO premium of the interaction between foreign VC presence and the proportion of foreign sales. There is such a positive effect for both measures of the foreignness of the VC syndicate, specifically the proportion of foreign VC firms (p=5%), and foreign VC ownership (p=1%). A 10% increase in the interaction between foreign business activities and *Foreign VC Presence* increases the IPO premium by 8.64 to 13.01 percentage points. Hence, Table 3 provides strong support for Hypothesis (2) on the advisory role of foreign VC firms.

Regressions (2a) and (2b) in Table 3, which adjust for the potential endogeneity of the foreignness of the VC syndicate, indicate that the foreignness of the VC syndicate is positively and significantly related to the IVs, *Same Foreign VC-CEO Origin* (p=5%) and *Pre-existing Foreign VC-VC Syndicate Relationship dummy* (p=1%). The foreignness of the VC syndicate also increases with the proportion of foreign sales (p=1%), suggesting that foreign VC firms are associated with IPO companies with foreign business activities.

Regressions (3a) and (3b) suggest that the proportion of foreign sales is positively and significantly related to the IV, *Foreign CEO dummy* (p=1%). The proportion of foreign sales

[9] There is evidence in Table 3 of a negative effect of foreign VC firms on the IPO premium, suggesting that foreign VC firms may suffer from liability of foreignness, which in turn affects the value of their portfolio firms at the IPO.

also increases with each of the two measures of foreign VC presence (p=1%).[10] The proportion of foreign sales is also greater for larger companies (p=5%), for older ones (p=5% or better), as well as for those where the parent company of any of the foreign VC firms operates in the same industry as the IPO company (p=10%). Finally, the proportion of foreign sales is negatively related to foreign VC reputation (p=1%).

As to the control variables, the IPO premium increases with company size (p=1%), the hi-tech dummy (p=1%), a NASDAQ listing (p=1%), and during the bubble period (p=1%). In addition, the IPO premium is lower for more mature IPO companies (p=5%), and those IPOs completed following positive market returns (p=1%). Finally, the foreignness of the VC syndicate is greater for more reputable foreign VC firms (p=1%), and for those where the parent firms of the foreign VC firms operate in the same industry as the IPO company (p=5% or better), but it is lower for more mature IPO companies (p=5% or better).[11]

4.3. Foreign VC firm origin, foreign business activities, and the IPO premium

Table 4 tests the validity of Hypothesis (3) on the monitoring role of foreign VC firms. It investigates whether the fact that the IPO company has at least one VC firm in the VC syndicate originating from the same country where it has foreign business activities increases the positive impact on the IPO premium of the interaction between foreign business activities and the foreignness of the VC syndicate. It does so via a subsample analysis, with the first subsample containing the IPO companies with foreign business activities in at least one the VC countries of origin (regressions (4a), (5a), and (6a) as well as regressions (7c), (8c), and (9c)) and the

[10] As expected, the effect of foreign VC presence on foreign business activities is economically greater than that of domestic VC presence. See regression (3b).

[11] As a robustness check, we measure foreign VC reputation by the number of IPOs per foreign VC firm rather than by the total number of previous US IPOs with which all VC firms were involved during the five years prior to the IPO. Our results remain consistent.

second subsample containing the remaining IPO companies (regressions (4b), (5b), and (6b) as well as regressions (7d), (8d), and (9d)).

Overall, regressions (4a), (4b), (7c), and (7d) in Table 4 suggest that the positive effect on the IPO premium of the interaction between foreign business activities and foreign VC presence is greater if foreign business activities occur in the same country as the country of origin of at least one of the foreign VC firms. The coefficient on the interaction term between foreign VC presence and foreign business activities is significantly greater (p=5%) for the subsample of IPO companies with foreign business activities in at least one the VC countries of origin. A 10% increase in the interaction term increases the IPO premium by an additional 7.44 (=1.419-0.675) to 12.37 (=1.967-0.730) percentage points. This supports Hypothesis (3). Expanding foreign VC locations to neighboring countries, i.e. countries with common borders, rather than just the VC firm's country of origin (e.g. a British VC firm is close to Ireland where the IPO firm has foreign business activities) yields consistent, yet slightly less significant results. The results for the control variables are consistent with those from Table 3.

Insert Table 4 Here

5. FURTHER INVESTIGATIONS

5.1. Measuring IPO value by IPO underpricing

Prior research examines the effects of VC firms on IPO underpricing, a measure for short-term performance, defined as the difference between the closing price on the first day of trading and the offer price expressed as a fraction of the latter. In untabulated robustness tests, we use underpricing (more precisely, the natural logarithm of underpricing, Ln (1+ Underpricing), due to skewness). Average underpricing for the sample is equal to 25.42%, and the median is 9.1%.

We expect underpricing to be lower for foreign VC-backed IPO companies with foreign business activities, and we find evidence of this.

5.2. Geographic diversification rather than foreign business activities

So far, we have focused on the existence and magnitude of foreign business activities. However, what may matter is the degree of geographic diversification rather than the intensity of foreign business activities. For example, an IPO company may have lots of foreign business activities, all concentrated in one single country, which would likely increase — rather than reduce — risk and uncertainty. Geographic diversification is typically measured by the number of countries where the company has foreign business activities (Hitt et al., 2006). In line with Hypothesis (2), we expect foreign VC firms to play an advisory role in IPO companies with geographically diversified foreign business activities, which positively affects IPO value.

Not tabulated in the paper, the average IPO company in the sample of 1,086 VC-backed IPOs has foreign business activities in 1.92 different foreign locations and the average IPO company in the subsample of 314 foreign VC-backed IPOs has such activities in 2.19 different foreign locations. The results, which are not tabulated, suggest that the IPO premium is positively related to the interaction between geographic diversification and foreign VC presence (p=10% or better). Specifically, for a 10% increase in the interaction between geographic diversification and *Foreign VC Presence*, the IPO premium is 0.28 to 0.96 percentage points higher. This confirms Hypothesis (2) on the advisory role of foreign VC firms in supporting the internationalization of their portfolio companies.

5.3. Foreign VC distance

In Section 2.2, we argued that, through their presence, foreign VC firms may play an advisory role in their IPO companies engaged in foreign business activities. Investors may thus be

willing to pay a greater premium for IPO companies with foreign business activities that have foreign VC backing. Still, foreign VC firms may have a positive effect on IPO value because of their access to distant markets rather than their presence. Chemmanur et al. (2016) posit that geographically distant foreign VC firms may potentially possess strengths that benefit their portfolio companies and that their domestic VC counterparts lack. For example, the advice provided by distant foreign VC firms may provide access to resources, such as untapped growth potential in foreign markets, which would otherwise not be available (Zimmerman & Zeitz, 2002). Nahata et al. (2014) show that cultural distance is positively associated with foreign VC success and portfolio company performance.

We use two proxies for distance: (1) *Foreign VC Geographic Distance*, i.e. the average distance, in miles, between the headquarters of the IPO company and the headquarters of each of its foreign VC firms, and (2) *Foreign VC Cultural Distance*, which measures the average cultural difference between each foreign VC firm's country of origin and the IPO company's home country, i.e. the USA. In line with Dai et al. (2012), we calculate *Foreign VC Cultural Distance* using the most up-to-date version (2010) of Hofstede's (2001) six dimensions of national culture: power distance, uncertainty avoidance, masculinity, individualism, long/short term orientation, and indulgence versus restraints. Similar to Kogut & Singh (1988), the cultural distance between a given foreign VC firm's country of origin *j* and the USA (*US*), the home country of all of the IPO sample companies, is computed as follows:

$$Cultural\ Distance_j = \sum_{i=1}^{6} \frac{(I_{ij} - I_{i,US})/V_i}{6}$$

where *i* refers to the above six dimensions of national culture, I_{ij} represents Hofstede's index for cultural dimension *i* and country *j*, and V_i represents the variance of the index across dimension *i*. Cultural distance is the average of the cultural distances between the country of origin of each foreign VC firm and the USA. The validity of Hypothesis (2) is tested using the

interaction between the foreign VC distance and foreign business activities. Again, we expect the coefficient on this interaction term to be positive. We find consistent evidence of this.

5.4. Extended sample

We repeat the tests for the validity of our three hypotheses by extending our sample of VC-backed IPO companies by including all non-VC-backed IPO companies with data available on IPO company and CEO characteristics. The extended sample contains 2,147 IPOs, including our sample of 1,086 VC-backed IPOs as well as the additional 1,061 non-VC-backed IPOs. The findings, which are not tabulated, are consistent with those for the sample of VC-backed IPO companies.

6. CONCLUSION AND DISCUSSION

While a large body of literature focuses on US VC firms that invest in IPO companies based outside the USA, little is known about the roles played by foreign VC firms investing in US IPO companies. This paper investigates whether foreign VC firms certify the quality of foreign business activities of US IPO companies, and whether they enhance these activities via their advisory and monitoring roles. Our paper does not find any evidence of a direct positive effect of foreign VC firms on the IPO premium. However, there is strong and consistent evidence of such *indirect* positive effects. These effects stem from the three distinct roles that foreign VC firms play. The roles are the certification role, the advisory role, and the monitoring role.

Concerning the first role, a VC syndicate of both foreign and domestic VC firms may be better at certifying the quality of the portfolio company than a VC syndicate consisting solely of foreign or domestic VC firms (Karsai et al., 1998). We contribute to this literature by showing that a VC syndicate with both foreign and domestic VC firms leads to a higher IPO premium.

Concerning the second role, foreign VC firms provide access to knowledge about foreign markets and access to social capital in these markets (Mäkelä & Maula, 2006). While it is difficult to measure the quality of advice provided by VC firms, we nevertheless contribute to this literature by showing that foreign VC firms play an advisory role that enhances the foreign business activities of their portfolio companies, which is reflected in a higher IPO premium. Hence, our paper contributes to the existing literature, which is as yet divided about the effects of foreign business activities on new ventures. For example, while Zahra et al. (2000) highlight the advantages of foreign business activities, LiPuma (2012) argues that such activities may expose new ventures to more varying political, economic, social, and technological environments. Our research suggests that foreign VC firms provide the necessary advice to ensure the benefits of foreign business activities outweigh their costs.

Finally, concerning the third role, we argue that the proximity of foreign VC firms to the foreign business activities of their portfolio companies reduces the monitoring costs of these activities. Foreign VC firms are able to visit the foreign plants, read the business reports and review operations without significant costs and loss of time, resulting in greater monitoring. Such closer and easier control ultimately reduces agency costs. We extend the literature on the monitoring role of foreign VC firms, and provide further clarification about the conditions under which foreign business activities create value in US IPO companies. Specifically, we find that the positive effect of the interaction between foreign VC presence and foreign business activities on the IPO premium is greater when the foreign VC firms are from the same countries where the IPO company has foreign business activities.

However, our research may suffer from at least five limitations. A first limitation relates to the above-mentioned three roles of foreign VC firms. To test the hypothesized effects of these three roles we require measures for certification, the provision of advice, and monitoring. However, there are no such direct measures. A second limitation refers to the fact that prior

literature suggests that the value and success of portfolio companies are differentially affected by the type of VC firm, and that different types of VC firms have different investment strategies (Tykvova & Walz, 2007). For example, corporate VC firms have financial and strategic goals, and use their industry experience to support the success and performance of their portfolio companies (Maula et al., 2005). Preliminary analysis suggests that, compared to other foreign VC firms, foreign corporate VC firms provide better advice to their IPO companies about their foreign business activities. Still, there is a need for a more thorough and detailed analysis, which we leave for future research. A third limitation relates to our treatment of risk factors. Our empirical results do not suggest any significant association between the *number* of risk factors and the IPO premium. However, risk factors could be classified into different categories (e.g. managerial, legal, technological, international, and financial issues), as they may not all have the same impact on IPO performance. A fourth limitation of our study pertains to the fact that our data does not permit us to identify what occurred first, i.e. the foreign VC backing or the foreign business activities. While our simultaneous system of equations, somewhat mitigates this concern, future research being able to determine the exact timing of foreign business activities relative to foreign VC investment would further our understanding of the role of foreign VC firms. Finally, as our study focuses on US IPO companies it needs to be seen whether our results are generalizable to other, possibly very different institutional contexts.

Our findings are important for entrepreneurs, US IPO companies, and US and foreign VC firms, as well as investors, policy makers and scholars interested in the effects of foreign VC firms on their US portfolio companies. Indeed, our research suggests that US IPO companies with foreign business activities benefit from foreign VC firms in their VC syndicate. Our findings also suggest that entrepreneurs should seek funding and support from foreign VC firms, in particular those located in their company's (potential) foreign markets, to benefit from

the kind of support that cannot be provided by domestic VC firms. Given their advisory and monitoring roles, foreign VC firms might be "sought after" partners by domestic US VC firms and US companies that are looking to develop their foreign business activities.

Nevertheless, our research does not suggest that foreign VC firms act as substitutes for domestic VC firms as we find that IPO companies benefit from VC syndicates including *both* foreign and domestic VC firms. This implies that both foreign and domestic VC firms play important, but distinct roles: There is a division of labor whereby foreign VC firms support foreign business activities, whereas domestic VC firms provide knowledge of the US market and support local business activities. This study extends our understanding of the role of foreign VC firms in US IPOs. It also calls for future research on the nature of their involvement in entrepreneurial companies, including their involvement in the governance of such companies. For example, future research may focus on the board representation of foreign VC firms and other potential channels through which they may exert their influence. Future research may also examine the validity of our findings for countries with different institutional environments and varying levels of entrepreneurial opportunities.

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Appendix – Variable Definitions

Variable	Definition
Dependent Variable	
IPO Premium	The difference between the offer price and the pre-IPO book value per share expressed as a fraction of the offer price
IPO Company Characteristics	
Proportion Foreign Sales	The IPO company's ratio of sales generated outside the US to the firm's total sales in the fiscal year prior to the IPO
Proportion Foreign Assets	The IPO company's ratio of assets owned outside the US to the firm's total assets in the fiscal year prior to the IPO
Proportion Foreign Income	The IPO company's ratio of income generated outside the US to the firm's total income in the fiscal year prior to the IPO
Foreign CEO dummy	Dummy equal to 1 if the CEO of the IPO company at the time of IPO is not born in the USA, and 0 otherwise
Market Capitalization	The total number of shares outstanding immediately after the IPO times the offer price
Hi-tech dummy	Dummy equal to 1 if the IPO company is a hi-tech firm as defined by Loughran and Ritter (2004), and 0 otherwise. Hi-tech companies are those with SIC codes 3571, 3572, 3575, 3577, 3578 (computer hardware), 3661, 3663, 3669 (communications equipment), 3671, 3672, 3674, 3675, 3677, 3678, 3679 (electronics), 3812 (navigation equipment), 3823, 3825, 3826, 3827, 3829 (measuring and controlling devices), 3841, 3845 (medical instruments), 4812, 4813 (telephone equipment), 4899 (communications services), 7371, 7372, 7373, 7374, 7375, 7378, and 7379 (software).
Company Age	The difference, in years, between the IPO date and the company's incorporation date
Number of Risk Factors	The number of risk factors stipulated in the IPO prospectus
Lock-up Period	The difference, in days, between the IPO date and the end of the lock-up period date
Underwriter Reputation	The underwriter reputation score based on the ranking in Loughran and Ritter (2004)
Bubble Period dummy	Dummy equal to 1 if the IPO occurs in 1999-2000, and 0 otherwise
Market Return	The weighted average of the daily return of the CRSP equally weighted portfolio over the 3-month period preceding the IPO date
NASDAQ dummy	Dummy equal to 1 if the IPO company is listed on NASDAQ, and 0 otherwise
Loss dummy Y–1	Dummy equal to 1 if the IPO company has a negative ROA in year –1 prior to the IPO, and 0 otherwise
Loss dummy Y–2	Dummy equal to 1 if the IPO comp has a negative ROA in year –2 prior to the IPO, and 0 otherwise
Founder CEO	Dummy equal to 1 if the IPO company's CEO is a founder of the company, and 0 otherwise
Equity Offer Ratio	The number of shares issued at the IPO to the total number of shares outstanding immediately after the IPO
VC Characteristics	
VC Syndicate	The number of VC firms investing in the IPO company immediately prior to the offering
Proportion of Foreign (Domestic) VC	The number of foreign (domestic) VC firms divided by the total number of VC firms within the VC syndicate
Foreign (Domestic) VC Ownership	The number of shares owned by foreign (domestic) VC firms divided by the total number of shares outstanding, both measured immediately prior to the IPO.
Foreign and Domestic VC dummy	Dummy equal to 1 if the VC syndicate of the IPO company involves both domestic and foreign VCs, and 0 otherwise

Foreign (Domestic) VC Reputation	The total number of previous US IPOs with which all of the IPO company's foreign (domestic) VC firms were involved during the five years prior to the IPO
Same VC-Foreign Business Country	Dummy equal to 1 if the IPO company has foreign business activities in at least one of the VC countries of origin, and 0 otherwise
Different VC-Foreign Business Country	Dummy equal to 1 if the IPO company has no foreign business activities in any of the VC countries of origin, and 0 otherwise
Same Foreign VC-CEO Origin	Dummy equal to 1 if the IPO company's CEO is from the same country as at least one of the VC firms, and 0 otherwise
Pre-existing Foreign VC-VC Syndicate Relationship dummy	Dummy equal to 1 if any of the foreign VC firms has co-invested in a prior IPO company since 1987 with any other member of the VC syndicate, and 0 otherwise
Same Foreign CVC-IPO Company Industry	Dummy equal to 1 if the VC syndicate includes a foreign corporate VC firm, whose parent company operates in the same industry as the IPO company, based on the one-digit SIC, and zero otherwise
Number of Foreign Subsidiaries	The number of countries where the IPO company has at least one foreign subsidiary, as listed in the IPO prospectus

Figure 1 – Theoretical Model

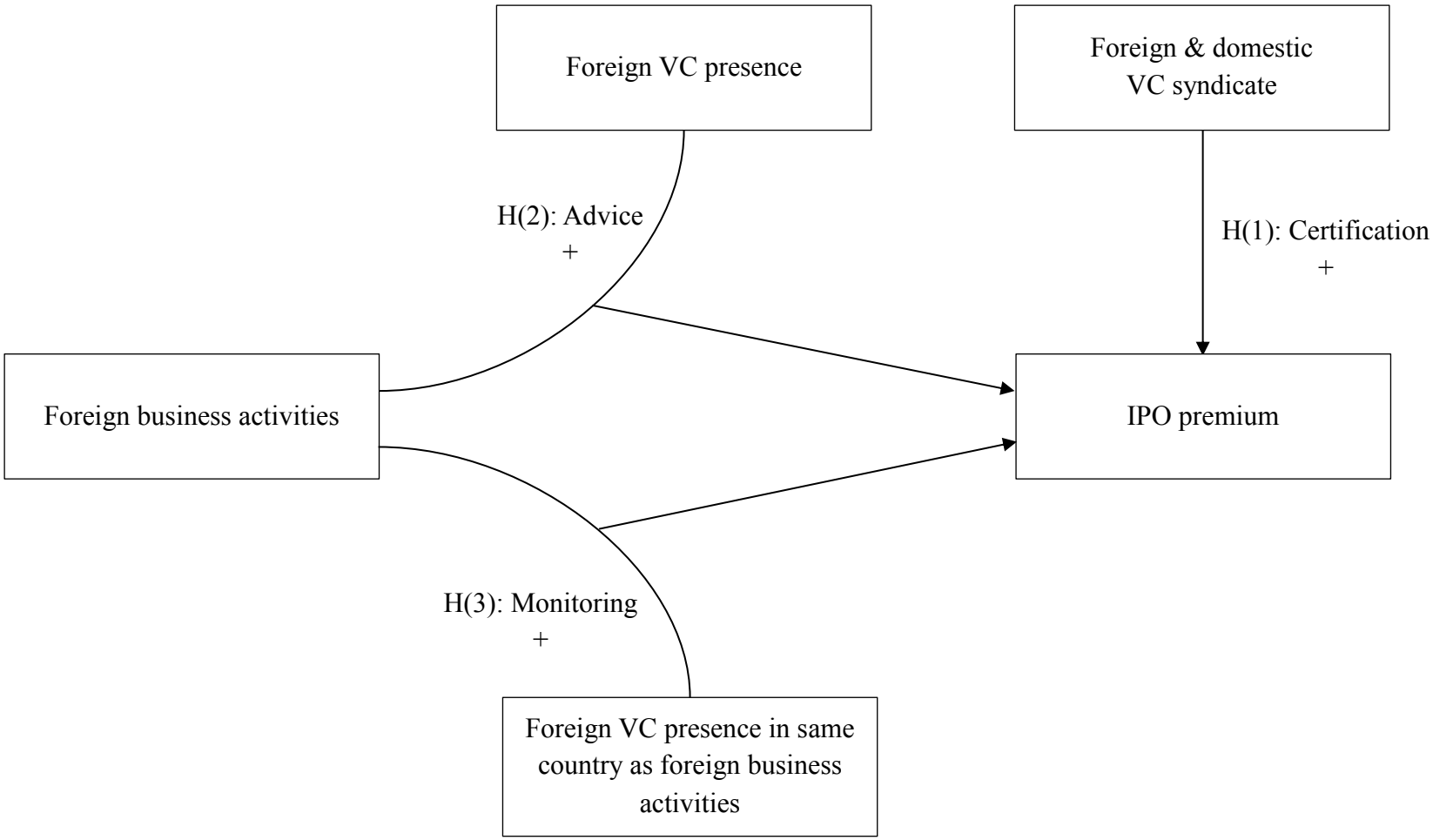

Table 1 – Descriptive Statistics

	Mean	Median	S.d.
Panel A – IPO Company Characteristics: Sample of VC-backed IPOs (N = 1,086)			
IPO Premium	0.734	0.744	0.188
Proportion Foreign Sales	0.110	0.000	0.209
Market Capitalization (in $mil.)	437.296	243.107	938.333
Hi-tech dummy	0.791	1.000	0.407
Company Age	9.649	6.206	12.598
Number of Risk Factors	30.150	30.000	10.023
Lockup Period	170.037	180.000	50.118
Underwriter Reputation	8.202	9.000	1.287
Bubble Period dummy	0.395	0.000	0.489
Market Return	0.008	0.002	0.020
NASDAQ dummy	0.904	1.000	0.294
Loss dummy Y–1	0.641	1.000	0.480
Loss dummy Y–2	0.656	1.000	0.475
Equity Offer ratio	0.356	0.287	0.217
Founder CEO	0.378	0.000	0.485
Foreign CEO dummy	0.250	0.000	0.433
Same Foreign VC-CEO Origin	0.034	0.000	0.180
Pre-existing Foreign VC-VC Synd. Relation	0.075	0.000	0.263
Same Foreign VC-IPO Company Industry	0.037	0.000	0.188
Panel B – VC Characteristics			
Sample of VC-backed IPOs (N = 1,086)			
VC Syndicate	3.883	3.000	2.845
Proportion of Foreign VCs	0.098	0.000	0.201
Proportion of Domestic VCs	0.902	1.000	0.201
Foreign VC Ownership	0.038	0.000	0.093
Domestic VC Ownership	0.365	0.342	0.253
For. & Dom. VC dummy	0.267	0.000	0.443
Foreign VC Reputation	1.270	0.000	5.980
Domestic VC Reputation	13.142	7.667	16.767
Same VC-Foreign Business Country	0.157	0.000	0.364
Foreign VC-backed Subsample (N = 314)			
VC Syndicate	5.723	5.000	3.456
Proportion of Foreign VCs	0.337	0.250	0.241
Proportion of Domestic VCs	0.663	0.750	0.241
Foreign VC Ownership	0.132	0.098	0.132
Domestic VC Ownership	0.327	0.309	0.245
For. & Dom. VC dummy	0.924	1.000	0.266
Foreign VC Reputation	4.366	1.000	10.506
Domestic VC Reputation	12.192	8.000	13.953
Same VC-Foreign Business Country	0.538	1.000	0.499

Table 2 – Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. IPO Premium	1.00														
2. For. & Dom. VC dummy	0.19	1.00													
3. Prop. For. Sales	0.28	0.11	1.00												
4. Prop. For. VCs	0.27	0.56	0.12	1.00											
5. For. VC Ownership	0.27	0.57	0.14	0.68	1.00										
6. Dom. VC Ownership	–0.01	–0.03	0.02	–0.22	–0.08	1.00									
7. Same VC-For. Bus.Country	0.21	0.44	0.17	0.50	0.41	–0.05	1.00								
8. For. VC Reputation	0.03	0.31	–0.01	0.27	0.28	–0.06	0.14	1.00							
9. Dom. VC Reputation	0.01	0.00	0.04	–0.10	–0.05	0.04	–0.02	0.00	1.00						
10. Market Cap. (in $mil.)	0.12	0.03	0.14	0.01	0.03	0.01	0.00	0.00	0.07	1.00					
11. Hi-tech dummy	0.17	0.12	0.01	0.10	0.09	–0.04	0.10	0.06	0.12	–0.09	1.00				
12. Company Age	–0.07	–0.07	0.09	–0.05	–0.05	0.03	–0.04	–0.01	–0.04	0.12	–0.25	1.00			
13. Loss dummy Y–1	0.05	0.09	0.00	0.07	0.08	0.08	0.07	–0.01	–0.01	–0.03	0.17	–0.17	1.00		
14. Loss dummy Y–2	0.11	0.12	0.03	0.11	0.10	0.05	0.08	–0.01	0.02	–0.03	0.20	–0.18	0.80	1.00	
15. Number of Risk Factors	0.15	0.16	0.15	0.11	0.13	0.23	0.13	0.01	0.17	0.14	0.06	–0.09	0.13	0.15	1.00
16. Equity Offer ratio	–0.15	–0.08	–0.14	–0.10	–0.05	–0.02	–0.06	0.03	0.03	–0.18	–0.02	–0.04	–0.08	–0.09	–0.21
17. Founder CEO	0.03	0.01	0.03	0.00	–0.02	–0.07	0.03	–0.04	0.00	0.00	0.01	–0.15	0.02	0.06	–0.01
18. VC Syndicate	0.08	0.47	0.06	0.10	0.18	0.16	0.34	0.13	0.00	0.00	0.15	–0.12	0.11	0.15	0.19
19. Same For. VC-IPO Industry	–0.04	0.25	0.21	0.35	0.29	–0.12	0.27	0.01	0.00	0.02	0.09	–0.02	0.03	0.08	0.02
20. NASDAQ dummy	0.06	0.08	–0.10	0.06	0.04	–0.14	0.06	0.03	–0.02	–0.17	0.30	–0.17	0.09	0.10	–0.02
21. Lockup Period	0.00	–0.02	–0.01	0.01	0.02	0.09	–0.03	–0.02	–0.08	–0.12	0.04	–0.08	0.01	0.01	0.05
22. Underwriter Reputation	0.14	0.09	0.09	0.06	0.07	0.12	0.10	0.03	0.09	0.15	0.00	0.02	0.09	0.10	0.10
23. Bubble Period dummy	0.10	0.00	–0.09	0.02	–0.04	–0.01	–0.04	–0.03	0.06	0.00	0.21	–0.19	0.28	0.27	–0.02
24. Market Return	–0.12	0.01	0.07	–0.04	–0.03	–0.09	0.01	0.02	0.07	–0.01	–0.12	0.12	–0.07	–0.07	–0.09
25. Same For.VC-CEO Origin	0.02	0.29	0.04	0.20	0.13	–0.09	0.30	0.15	–0.02	0.00	0.00	–0.02	0.02	0.03	0.07
26. Pre-exist. For. VC-Syn.Rel.	0.03	0.45	0.01	0.28	0.29	–0.04	0.31	0.21	0.01	0.07	0.03	–0.03	0.07	0.08	0.09
27. For. CEO dummy	0.03	0.15	0.21	0.05	0.04	–0.03	0.11	0.01	0.03	0.08	0.10	–0.03	0.02	0.06	0.09

	16	17	18	19	20	21	22	23	24	25	26	27
16. Equity Offer ratio	1.00											
17. Founder CEO	0.03	1.00										
18. VC Syndicate	–0.05	–0.07	1.00									
19. Same For. CVC-IPO Industry	–0.02	–0.03	0.17	1.00								
20. NASDAQ dummy	0.02	0.07	0.05	0.01	1.00							
21. Lockup Period	0.06	–0.07	–0.02	0.01	0.04	1.00						
22. Underwriter Reputation	–0.09	0.11	–0.05	0.04	0.03	–0.18	1.00					
23. Bubble Period dummy	–0.06	–0.04	0.18	–0.01	0.04	–0.02	0.14	1.00				
24. Market Return	–0.04	0.09	–0.14	0.01	–0.03	–0.14	–0.01	–0.15	1.00			
25. Same For.VC-CEO Origin	–0.03	0.32	–0.02	0.15	0.06	–0.07	0.07	–0.11	0.19	1.00		
26. Pre-exist. For. VC-Syn. Rel.	–0.05	0.31	0.03	0.07	0.00	–0.04	0.03	0.00	0.03	0.25	1.00	
27. For. CEO dummy	–0.08	0.04	0.04	0.14	0.00	–0.00	0.05	0.02	0.02	0.08	0.02	1.00

Notes: Pearson correlation coefficients were used for continuous variables, point biserial correlation coefficients were used for dichotomous variables. Correlation coefficients greater than .058 (.079) or less than –.058 (–.079) are significant at the 5% (1%) level and above.

Table 3 – IPO Premium, Foreign VC, and Foreign Business Activities Using the Sample of VC-backed IPO Companies: A 3SLS Model

	IPO Premium	Prop. For. VCs	Prop.For. Sales	IPO Premium	For. VC Ownership	Prop. For. Sales
	(1a)	(2a)	(3a)	(1b)	(2b)	(3b)
Constant	0.453*	0.151	0.374	0.357	-0.013	-0.221
	0.237	*0.242*	*0.231*	*0.290*	*0.136*	*0.219*
Main explanatory variables						
Foreign & Domestic VC dummy	0.137**			0.110**		
	0.065			*0.054*		
Proportion Foreign Sales	0.808**	1.175***		0.862***	0.607***	
	0.317	*0.040*		*0.198*	*0.024*	
Foreign VC Presence	-0.782**		0.818***	-1.686**		1.585***
	0.350		*0.031*	*0.685*		*0.063*
Foreign VC Presence x Proportion Foreign Sales	0.864**			1.301***		
	0.423			*0.506*		
Domestic VC Presence				-0.105***	-0.047***	0.077***
				0.028	*0.016*	*0.027*
Same VC Foreign Bus. Country	0.015		0.006	0.008		0.005
	0.031		*0.015*	*0.026*		*0.013*
Foreign VC Reputation	0.005***	0.009***	-0.007***	0.002**	0.004***	-0.006***
	0.002	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*
Domestic VC Reputation	-0.001*	0.001***	-0.001***	-0.000*	0.000*	-0.000
	0.000	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Instrumental variables						
Same Foreign VC-CEO Origin	0.015**			0.011**		
	0.007			*0.005*		
Pre-existing Foreign VC-VC Syndicate Relationship dummy		0.028***			0.010***	
		0.010			*0.003*	
Foreign CEO dummy			0.039***			0.045***
			0.009			*0.011*
Control variables						
LnMarket Capitalization	0.028***	-0.012*	0.014**	0.028***	-0.003	0.013**
	0.009	*0.007*	*0.006*	*0.007*	*0.004*	*0.006*
Hi-tech dummy	0.072***	0.023	-0.018	0.067***	0.014	-0.023
	0.020	*0.023*	*0.020*	*0.018*	*0.012*	*0.020*
LnCompany Age	-0.020**	-0.022**	0.019**	-0.019**	-0.014***	0.023***
	0.010	*0.010*	*0.009*	*0.009*	*0.005*	*0.008*
Loss dummy Y-1	0.040*	-0.004	0.003	0.040*	0.017	-0.028
	0.022	*0.025*	*0.022*	*0.020*	*0.013*	*0.021*

Loss dummy Y-2	0.046**	0.027	-0.021	0.040**	-0.006	0.009
	0.022	*0.026*	*0.023*	*0.020*	*0.013*	*0.022*
Number of Risk Factors	0.000			0.000		
	0.001			*0.001*		
Equity Offer ratio	-0.047*			-0.047*		
	0.026			*0.028*		
Founder CEO	-0.021*	-0.024*	0.017	-0.023*	-0.016**	0.026**
	0.013	*0.014*	*0.013*	*0.013*	*0.008*	*0.013*
VC Syndicate	-0.004	0.000	-0.000	-0.003	0.003*	-0.005*
	0.006	*0.003*	*0.002*	*0.003*	*0.001*	*0.002*
Same Foreign CVC-IPO Company Industry		0.150***	0.057*		0.040**	0.058*
		0.037	*0.035*		*0.019*	*0.032*
NASDAQ dummy	0.072***			0.063***		
	0.025			*0.023*		
Lockup Period	0.000			0.000		
	0.000			*0.000*		
Underwriter Reputation	0.002			0.002		
	0.005			*0.005*		
Bubble Period dummy	0.648***			0.641***		
	0.245			*0.193*		
Market Return	-0.854***			-0.834***		
	0.290			*0.287*		
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	1086	1086	1086	1086	1086	1086
Chi2	16416.41	1037.37	1054.30	15385.85	861.90	971.69
Prob.	0.000	0.000	0.000	0.000	0.000	0.000
Hansen-Sargan overidentification statistic		6.611			3.583	
Prob.		0.159			0.472	

Standard errors in italic. ***, **, *: Significance at the 1%, 5%, and 10% level, respectively.

Table 4 – IPO Premium, Foreign VC, and Foreign Business Activities Comparing the Subsamples of VC-backed IPO Companies with Same VC-Foreign Business Country vs Different VC-Foreign Business Country: A 3SLS Model

	Same VC-For.Bus. Country			Diff. VC-Foreign Bus. Country			Same VC-For.Bus. Country			Diff. VC-Foreign Bus. Country		
	IPO Premium	Prop. For. VCs	Prop. For. Sales	IPO Premium	Prop. For. VCs	Prop. For. Sales	IPO Premium	For. VC Ownership	Prop. For. Sales	IPO Premium	For. VC Ownership	Prop. For. Sales
	(4a)	(5a)	(6a)	(4b)	(5b)	(6b)	(7c)	(8c)	(9c)	(7d)	(8d)	(9d)
Constant	4.490**	0.054	0.367**	3.343**	0.038	0.273	0.578*	-0.019	-0.174	0.320	-0.016	-0.233
	1.888	*0.134*	*0.167*	*1.404*	*0.244*	*0.206*	*0.343*	*0.095*	*0.155*	*0.245*	*0.088*	*0.208*
Foreign & Domestic VC dummy	0.188***			0.056*			0.398***			0.060*		
	0.054			*0.029*			*0.135*			*0.033*		
Proportion Foreign Sales	2.140*	0.624***		0.473*	1.236***		1.513***	0.479***		0.424**	0.509***	
	1.206	*0.071*		*0.277*	*0.074*		*0.513*	*0.024*		*0.212*	*0.037*	
Foreign VC Presence	-3.152**		0.838***	-0.194		0.694***	-2.027**		2.085***	-0.990*		1.401***
	1.392		*0.111*	*0.339*		*0.040*	*2.477*		*0.102*	*0.506*		*0.110*
Foreign VC Presence	1.419*** c1			0.675* c1			1.967*** c2			0.730* c2		
x Proportion Foreign Sales	*0.199*			*0.401*			*0.551*			*0.436*		
Domestic VC Presence							0.070	-0.022	0.045	-0.026	-0.032**	0.059**
							0.138	*0.045*	*0.094*	*0.025*	*0.013*	*0.026*
Foreign VC Reputation	0.002	0.009***	-0.003*	0.001	0.009***	-0.007***	0.003**	0.002*	-0.003	0.002	0.005***	-0.008***
	0.001	*0.002*	*0.002*	*0.001*	*0.002*	*0.002*	*0.001*	*0.001*	*0.002*	*0.001*	*0.001*	*0.002*
Domestic VC Reputation	-0.003	-0.003**	0.001	0.000	-0.001***	0.001***	-0.004	0.001	0.002	0.000	0.000***	0.001*
	0.002	*0.001*	*0.001*	*0.000*	*0.000*	*0.000*	*0.003*	*0.001*	*0.001*	*0.000*	*0.000*	*0.000*
Same Foreign VC-CEO Origin		0.061*			0.012		0.011**			0.009		
		0.033			*0.024*		*0.005*			*0.006*		
Former Foreign Corp. VC -VC Syndicate		0.017*			0.041***			0.005*			0.062***	
Relationship dummy		*0.009*			*0.012*			*0.003*			*0.011*	
Foreign CEO			0.036*			0.035**			0.033***			0.043***
			0.019			*0.017*			*0.012*			*0.010*
Same Foreign VC-IPO Company Industry		0.132***	0.064*		0.108***	0.052*		0.024	0.048		0.088***	0.068*
		0.040	*0.038*		*0.032*	*0.031*		*0.020*	*0.043*		*0.024*	*0.038*
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	170	170	170	916	916	916	170	170	170	916	916	916
Chi2	124.850	710.820	328.120	20113.190	383.630	526.470	1183.300	694.870	662.070	19961.110	501.280	404.660
Prob.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

The superscripts c1 and c2 identify the pairs of coefficients with a significant Z-test statistic with the difference in the two coefficients significant at the 10% level.
Standard errors in italic. ***, **, *: Significance at the 1%, 5%, and 10% level, respectively.